BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of: **Docket No. 99-DIST-GEN-(2)**

Exploring Revisions to Current Interconnection Rules)
Between Investor-owned and Publicly-owned Utility)
Distribution Companies And Distributed Generators)
and Competition in Electric Distribution Service)
)
Evaluating CEQA Procedures for Siting)
Distributed Generation Technologies)
_____)

RESPONSES OF THE DISTRIBUTED POWER COALITION OF AMERICA

to

QUESTIONS FOR THE SITING COMMITTEE WORKSHOP on INTERCONNECTION RULES

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The Distributed Power Coalition of America (DPCA) commends California s Energy Commission (CEC) and Public Utilities Commission (CPUC) for continuing their commitment to develop policies, rules and standards for the deployment of distributed generation in California. We welcome the opportunity to respond to the CEC s questions for its December 6, 1999 Siting Committee workshop on interconnection rules.

A. INTRODUCTION

The Distributed Power Coalition of America is a nationwide coalition of organizations whose mission is to advocate the adoption of distributed energy resources (DER) that will benefit the electric system and energy consumers. Formed in 1997, DPCA now has over 60 members, listed in Exhibit A. They represent all segments of the DER industry, including equipment manufacturers, energy service companies, DER developers, electric and gas distribution utilities, natural gas pipelines, consultants, and educational and research organizations. DPCA is technology - and fuel-neutral: its objective is to advance all DER that can provide cost, reliability, environmental or other benefits to energy consumers and the general public.

DPCA s federal activities have included legislative briefings, Congressional testimony, and educational efforts with federal policy makers. Our state activities have included participation in the CPUC s first distributed generation rulemaking earlier this year; a leading role in interconnection proceedings in New York and Texas; and contributions to legislative debates on electric restructuring in Virginia, New Jersey, Maryland and Ohio.

DPCA also supports state regulators by providing information about DER technology and policy issues, and we sponsor national conferences and policy seminars to focus attention on DER issues (most recently with the California Alliance for Distributed Energy Resources in San Diego this fall). DPCA also has ongoing relationships with GRI s Distributed Generation Forum, the National Renewable Energy Laboratory, and similar organizations interested in DER development. To serve its diverse membership, DPCA promotes and encourages constructive collaboration among all DER stakeholders.

Scope of DPCA Comments Some DPCA member organizations will be filing separate comments in this proceeding to offer their individual company perspectives. Because DPCA members represent a wide spectrum of interests, their perspectives naturally vary, and their individual filings will reflect that. DPCA s purpose here is to address issues that its membership as a whole believes are especially important to DER development, and on which members generally agree as to scope and substance (if not necessarily as to their ultimate resolution).

B. GENERAL COMMENTS ON CEC INTERCONNECTION INVESTIGATION

DPCA concurs with the CPUC s recent observation that:

> there is a need to develop statewide interim interconnection standards as soon as possible. Pending development of national standards, interim statewide standards are needed so that the deployment of distributed generation facilities can be facilitated as quickly as possible. If we wait for the IEEE to develop nationwide standards, the existing interconnection tariffs may act as barriers to the development of distributed generation. (*Opinion Regarding Distributed Generation and Electric Distribution Competition*, October 21, 1999; p. 32)

DPCA members view the current uncertainties, costs and delays surrounding interconnection today as one of the most serious impediments to the sensible deployment of distributed energy resources (DER). We have been privileged to participate actively in other states interconnection rulemakings, and hope to offer some of what we have learned there in support of the CEC effort now getting under way.

A recent study conducted for the Orange & Rockland Electric Company in New York pegged interconnection costs at $133 per kW. This represents between 10 and 50 percent of the total installed cost of many DG technologies — enough to make many otherwise valuable DG projects uneconomic. How is this possible? How can interconnection issues for DG technologies differ so dramatically from those facing, say, induction or synchronous motors of similar size, commonly installed at commercial and industrial sites without significant interconnection issues?

Much of the answer lies in the need for standards. Most DG equipment manufacturers can economically build into their equipment standard protective functions that meet the high safety requirements of responsible utilities. Standardization can enable utilities to accept these installations without safety concerns if the device has passed independent type-testing. It can also save utility customers the utility s considerable cost of reviewing and testing each individual installation. Equally important, standardization permits end-users to install DG without mastering arcane local interconnection requirements for each locale in which they operate.

This Commission and the CPUC are positioned to play critical roles by directing the standardization effort. By articulating the desired objectives of standardization and the real costs of failure to achieve it, California s Commissions can create an atmosphere in which the parties will more actively and productively search for solutions. DPCA knows that it is not easy to ask a professional utility engineer to consider changing protective approaches that have served the utility and its customers well over time. Nor is it easy to convey to a DER provider the complexities of large utility systems that affect the integration of its promising new generation technology. All stakeholders have a lot to learn about how emerging DER technologies can best support or relieve pressures on existing utility systems. There are probably many ways to achieve this objective, and California s Commissions should continue to encourage all parties to freely exchange ideas and consider alternative approaches. For if this State s agencies cannot reach satisfactory technical results through a cooperative process with clear goals and objectives, stakeholders assuredly cannot do so through protracted administrative and legal jousting in the years ahead. The technical and

professional expertise needed to sort the wheat from the chaff is a rare commodity, not likely to find its most productive expression in adversarial hearings or courtrooms.

Finally, we are not suggesting that the CEC s goal should be to define a common statewide standard simply for the sake of creating a standard. We believe that the State s utility systems are more alike than they are different. However, we recognize that there may be unusual situations that require system-specific standards. Absent compelling circumstances, we believe that such standards would be counterproductive and inconsistent with the goal of these proceedings. But sensible DG development will suffer if the alternative is to set a lowest common denominator standard based on the least proficient utility s worst-case scenario. To avoid that outcome, there may be some — hopefully rare — situations where it is enough to set a standard that is workable for most portions of the utilities systems, allowing variances for specific planning areas where unique conditions are demonstrated that require some specified departure from otherwise uniform standards.

C. RESPONSES TO CEC QUESTIONS

DPCA s specific responses to the CEC s questions for the December 6 Siting Committee Workshop follow. The responses focus primarily on situations where a DER operates in parallel with the grid and can export power, rather than situations in which a DER supplies only the site s load and is not designed for export. Responses are numbered to correspond with the November 10 Notice of Workshop.

I. Scope of technologies to be considered for standard interconnection rules

A. What size range of generating technologies should be applicable to the interconnection rules being considered in this proceeding?

B. Should interconnection rules differ based on size range and technology? If so, how?

DPCA sees no reason to limit the application of interconnection rules or standards to any particular size DER initially. The Texas standards cover units up to 10 MW. The New York standards presently cover only 300 kva and below on radially connected circuits, but a second

phase of New York s collaborative early next year is expected to expand the size range covered. It appears that California policymakers generally are considering DER in the range of 20 MW, and a number of parties support the application of uniform standards to larger units as well.

Utilities may have distinct levels of standards depending on unit size (and sometimes location on the grid). We understand that the work of CADER s Interconnection Committee has likewise focused on interconnection needs related to different size ranges, rather than different technologies. Specific protection requirements may vary somewhat across size ranges, but should nevertheless be uniform within each category. As one considers larger and larger units, the *settings* of required relays or devices may vary with the unit s relative impact to the electric system and the importance of its generation to local system stability. Also, the size of a unit relative to the capacity of the feeder to which it connects might dictate a more rigorous review — but the *criteria* that trigger such a review should be clearly identified and included in whatever standards result.

For example, from a voltage perspective it may be desirable to encourage DG operating as baseload units to remain on the line during periods of high demand. To achieve this, frequency and voltage relays may be set to ride through voltage and/or frequency swings that would otherwise shut down the unit. The New York standards proposed by the Staff do not provide for this flexibility (or even apply to much of New York City s grid). In fact, if 1000 MW of DG had been installed and operating in northern Manhattan when distribution feeders to the area were overloaded this summer, they all would have been tripped off on low voltage — just when they were needed most.

DPCA does not believe that interconnection standards need to vary by technology. Technologies vary vis- -vis interconnection requirements primarily in how they accomplish the actions they must take to respond to a particular event. For example, inverter-based technologies replace relays and breakers with solid state devices that disconnect and reconnect when disturbances occur. These technologies may require new or different testing procedures to verify their functionality and capabilities. However, those who work with inverters consider them as

effective and reliable as traditional relay technology more familiar to many utility engineers. Extensive testing is now under way to confirm their reliability in the field, and its results should be increasingly available.

C. Should electricity storage technologies be considered also? If so, what types should be considered?

In keeping with the CPUC s Order Instituting Rulemaking #99-10-025 (p. 5), DPCA understands that the CEC s investigation will focus on DER that are capable of generating electricity. However, to the extent that electricity storage technologies offer safe and reliable alternatives to conventional generation or distribution capacity additions, and raise similar interconnection and policy issues, DPCA welcomes their consideration here.

D. Should the standards be independent of the mode of operation? In other words, should the same standards apply whether the intended function is for emergency or back-up use only versus primary use? Should any standards apply to an islanded mode?

If a DER unit is incapable of feeding power onto the grid or physically prevented from doing so, then there is minimum potential to adversely impact grid operations, and no reason to require utility impact studies of any kind. Thus the distinction between DER units designed to export power and those not designed to do so is a critical divide when considering interconnection requirements, and DPCA would oppose the imposition of any such requirements on grid-independent facilities.

DPCA suggests that whatever standards are set generally can apply to all parallel operating modes. This investigation could possibly identify situations where special treatment is warranted, such as some involving sales to the utility. However, we encourage the Commission to assume at the outset that such situations will be rare, and that any that are proposed should be fully documented. Absent this working assumption, the CEC process could be burdened with a flood of special cases before the more important dialog even begins, and CEC staff could be consumed with evaluating such claims before ever beginning to draft standards of general application. Where there is a genuine need to address special cases , these might best be treated

simply as different standards rather than exceptions to standards that are otherwise satisfactory — and the party advancing them should bear the burden of proof.

Whether any standards should apply to islanding depends on how the CEC is using that term. As emphasized above, if islanding here means that a generator is isolated from the grid and serving only a customer s load, utility standards should not be imposed. On the other hand, islanding is sometimes used to describe a situation in which a generator without appropriate protection devices *could* feed power back onto the grid during periods when the utility feeder is out of service — perhaps while utility personnel are attempting to repair the line. Clearly, interconnection standards should prevent this, and they should ensure that DER units capable of energizing the grid remain disconnected under these circumstances.

E. Should the same standards apply to new installations versus retrofit of existing self-generators or emergency generators?

Existing generators that meet current interconnection standards should not be required to retrofit to meet new standards. However, they should be free to elect to meet new standards if they choose to for their own reasons, and at their own expense.

1. What options should end-users have in terms of choice of interconnection voltage levels, and what are the consequences of these choices?

End-users should be able to interconnect to any voltage reasonably available to them, so long as neither safety nor system reliability is compromised. If the UDC identifies specific situations on its system where that could occur, then the UDC and prospective applicants will both benefit from a clear advance written definition of the conditions that create the concern, as well as of specific measures required to address it. Technical advantages of moving to a higher voltage can include greater reliability, improved power quality, fewer nuisance trips of one s generator, and lower system impact. Disadvantages can include the cost of duplicating or upgrading protective equipment already installed for the user s existing service level.

2. Are there utility-specific conditions that preclude the application of a single standard?

There can be utility-specific conditions that require a utility-specific standard. If utilities exercising reasonable discretion show cause as to why there is a concern, they should have the flexibility to require reasonable deviations from the standard.

Legitimate technical differences between utilities only *increase* the need for standardization — even if that occasionally means that some standard must be set for each utility. Where legitimate differences do exist, the cost of slightly varying standards is likely to be far less than the cost of uncertainty for equipment vendors, project developers and utilities alike.

3. The CPUC OIR excludes interconnection rules to the transmission side. Is there any need to revisit this decision? Can it be applied without exceptions?

Most grid-connected DER will be connected at the distribution level. However, where distributed benefits can accrue from connecting at the subtransmission or transmission level, there is no reason in principle why that should not occur. Apart from any jurisdictional questions affecting transmission facilities, standards for transmission interconnection could be developed, and could have the same salutary effects they would at the distribution level. However, it is not necessary to include DER interconnection to transmission facilities in this proceeding.

II. Need for California standards and replacement by national standards

A. Which states have made similar efforts to develop interconnection standards? What is the scope of these efforts? To what extent can the work of other states (e.g., Texas and New York) serve as useful starting points for this effort?

DG interconnection standards under discussion in Texas are probably the most pertinent standards presently available. Although we have not yet seen the final standards, those currently

under review apply to units up to 10 MW. They result from significant discussions among utilities and other interested parties, and represent a reasonably balanced approach.

Nevada has recently issued Rule 9 — Distribution Line Extensions and Rule 15 — Parallel Operation by Generators and Net Metering Systems — as well as a draft Pro-Forma Interconnection Operating Agreement for Class B and Class C Customers that provide interconnection standards for distributed generation of sizes above 5 MW.

Proposed standards in New York are also the result of considerable discussions, in which DPCA and others actively participated. Although consensus was reached in many areas, critical disagreements remain in others, including the approval process, type-testing and costs. New York Commission Staff have not attempted to resolve areas of technical disagreement in which they are not expert, but have committed to monitor the process carefully to ensure that it moves forward, and that any cost assessments are reasonable. DPCA is not convinced that the New York standards proposed so far represent a good starting point for California. Among other things, we are concerned that they propose a worst case standard in too many instances, rather than a more reasonable overall standard with specific differences justified for certain utilities when unique circumstances require.

As noted above, distributed benefits can accrue at different system levels, and there is no reason to set artificial limits on the size of DG. However, various jurisdictions have set different size limits for DG for the purpose of interconnection standards. California regulators, for example, have suggested 20 MW as an appropriate size limit. On-site generation varies in size from very small units for individual homes, to very large units at industrial sites.

FERC Order 888 provided flexibility in determining which facilities would be treated as state jurisdictional distribution facilities, and which would be regulated by FERC as interstate transmission facilities. FERC s Seven Factor Test recognizes that no single test clearly distinguishes transmission from distribution . In some locales a generator will be connected to a

local distribution system, while the same unit in another locale may be connected to a transmission system.

The situation of California s own utilities is instructive. When the Independent System Operator (ISO) was established, utilities were required to submit a split for transmission and distribution. PG&E s split was at 66 kV, while SCE s was at 220-230 kV — a significant variation. This situation is not unique to California: PECO s Pennsylvania transmission system, typical for Eastern utilities, appears to be at voltages greater than 69 kV, while municipalities and co-ops in the region can be as low as 13 kV.

The DPCA urges California s policymakers to adopt a similarly flexible approach to interconnection. Utilities do need to protect their systems from interconnections with generators too large for their lines. At the same time, the ability to interconnect, whether at the transmission or distribution level, is critical to developing healthy competitive markets for electricity. DPCA therefore favors a functional definition of interconnection, one that allows interconnection at the distribution or the transmission facility, whichever is appropriate for the size of the generator. A standard based on safety can protect the utility system from unduly large generators, while ensuring that all sizes of on-site generating systems can connect with the grid.

B. What efforts have been made within the state to develop a California consensus on interconnection standards?

CADER s INCOM committee has conducted preliminary discussions on this subject. We understand that its chairman will report on the committee s work at the CEC s December 6 workshop. DPCA believes it would be preferable to develop statewide, if not national, standards for interconnection, rather than separate standards for each utility.

C. What is the scope and timing of the IEEE P1547 Distributed Resources Interconnection Standard Working Group?

Again, we expect that an IEEE representative will address these issues at the December 6 workshop.

D. To what extent do California utilities, manufacturers, and other interested parties participate in the IEEE P1547 Working Group process? How would the development of interim standards in California affect the progress of the IEEE P1547 effort and its representation by California entities?

DPCA is concerned that DG equipment vendors, developers, and other non-utility market participants may not be adequately represented in IEEE s standardization efforts due to the cost and logistics of participation.

Having participated in state efforts to standardize interconnection requirements, DPCA understands that utility participants are extremely cautious about standardizing interconnection rules and procedures. Utility engineers are charged with responsibility for protecting their systems and the safety of utility employees. They have powerful incentives to ensure that failures do not occur, but much less compelling incentives to champion departures from historical practices — even where these stand to improve reliability or enhance safety. Utility engineers engaged in interconnection discussions are understandably focused on preventing system problems, not on breaking ground to accommodate more efficient or environmentally benign ways of delivering power.

DPCA is hopeful that IEEE s efforts will bear fruit. However, it may take longer than anticipated for a national standard to develop, and the IEEE work (which focuses on technical issues) is not anticipated to include all of the commercial aspects of the interconnection agreement. We urge California policymakers to move forward to create interim standards and procedures, which would be in keeping with California s history of pioneering innovative approaches. We see no reason why its commitment to do so here should interfere with others efforts. On the contrary, we hope that any California successes in simplifying interconnection

rules and streamlining procedures can benefit IEEE and others charged with similar responsibilities.

E. Can interim standards developed in California be considered effectively in the IEEE P1547 effort?

We are hopeful that IEEE representatives will address this question at the December 6 workshop. For its part, DPCA offers whatever assistance it can reasonably provide to expedite IEEE s consideration of standards adopted in the California proceedings, and to support reasonable standards at the national level. We do believe that the joint commitments and resources of California s Commissions, and the active participation of its energy community, lends force and credence to any standards developed here, and provides needed urgency to a process that could otherwise drag on for some time.

F. How would interim standards be adopted and enforced in California? Should they apply to public utilities as well as the CPUC-regulated utilities?

We understand that the basic procedure and schedule for adoption of interconnection standards is outlined in OIR #99-10-025. As to enforcement, please refer to our comment on question IX-C, below.

CPUC jurisdiction is of course limited to investor-owned utilities, and does not extend to publicly-owned utilities such as LADWP, SMUD, or many other municipal utilities. If standards developed here are to be applied to publicly-owned utilities in the state, we understand that such direction would need to come from California s legislature.

As a practical matter, DPCA believes that the more uniformity and consistency there is in interconnection standards among utilities, the sooner any DER benefits can be realized, and the sooner utilities and their customers can share in them. From the standpoint of an equipment manufacturer, project developer or energy service provider, who owns or operates the system does not affect technical interconnection design or implementation requirements. What variation

there may need to be in technical interconnection standards is a function of the type of physical utility system involved, not whether the system is privately or publicly owned. While there may be some contractual and procedural aspects of interconnection that will vary between investor-owned and publicly-owned utilities, we would not anticipate special problems in adapting these from one type of utility to another.

G. What are the mechanics for replacing interim California standards with national standards (i.e., IEEE P1547)?

At this stage, we would defer to IEEE s representative to address the issue of mechanics at the December 6 workshop. We can suggest that, to the extent the two sets of standards might differ, it would not be necessary to simply replace one with the other. It might be preferable, for example, initially to treat national standards developed after California s interim standards simply as guidelines, or perhaps recommended practices, until enough experience accumulates to evaluate which standards best advance the State s policy goals for DER deployment, and to harmonize any differences over time.

III. Safety issues

DPCA unequivocally supports the need for safe and reliable operations of the State s electric system. Safety and reliability are fully as important to the success of DER as they are to more conventional ways of delivering energy. It is not remotely in the commercial interest of DER equipment manufacturers, vendors, or energy service providers to compromise these values, any more than it is in the interest of more conventional energy suppliers to do so.

The challenge for California s Commissions is to determine how these values can be served cost-effectively, without unwarranted discrimination, and without undue reliance on standards or procedures developed in different times for different technologies.

A. What are the major safety issues associated with DG interconnection?

The primary safety issues are (1) to protect both sides of the interconnection from power flows from the other during fault conditions, and (2) to ensure that the short circuit fault current at the generator is within the available fault limits of the system at the point of interconnection. If it is not, appropriate current-limiting devices would be required.

B. What safety characteristics/protective devices are required of the DG machinery itself?

A DG unit must be equipped with protective safety devices capable of isolating its output from the utility grid in the event of an external fault. It should also be manufactured to withstand internal faults; however, the DG owner should be solely responsible for the protection of his own equipment, provided that it has no impact on the electric system. Generally, DG packages are designed and manufactured to withstand minimum standard fault currents (and those values are indicated on the unit.)

C. What safety characteristics/protective devices are required for the interconnection device? Is there a need for a disconnect switch in every instance? If not, what criteria triggers the need for a disconnect switch?

DPCA strongly supports the development of standards that specify functionality as opposed to specific devices and control schemes. The primary goal of protective schemes for interconnections is to eliminate the potential of a generator or motor to feed power onto the grid when a fault occurs on the grid. A manufacturer should be able to propose any solution that protects the grid and its customers from any adverse affects caused by a generator. The standards should focus on the result that is required, rather than on the means of achieving it. Any new technology or protective scheme must be tested for its ability to meet functional requirements. DPCA believes that this determination should be made by independent testing labs, pursuant to requirements established in this and similar proceedings.

D. What installation testing procedures should be required? Is there a need for periodic retesting? If so, how often and by whom?

DPCA submits that each new unit should be subject to some level of commissioning testing in order to assure that the connection is operating as designed. The UDC should be entitled to witness this test and to receive a copy of the results. If the UDC identifies a problem with the testing, it should have the right to stop the testing (if it chooses to witness the test) to correct the problem, or to review the test results for compliance with the standards.

Such a post-start-up review must be conducted expeditiously. If the utility identifies material errors or problems with the testing procedure or the results of the test, it may require that those portions of the test be performed again.

Periodic testing should be performed and documented by the generator owner at intervals recommended by the equipment manufacturer.

IV. Feasibility of type testing

A. Should type testing be incorporated into the interim standards development process? If so, what factors should be considered in the development of standardized testing processes for various DG types?

DPCA strongly supports the use of type testing, and believes that it should be considered as part of any interim standards development process. Type testing is a term introduced in the New York interconnection proceedings. It refers to the testing and introduction of a unit or device previously reviewed and approved by an independent party approved by the responsible Commission. Once this unit or device is approved for installation, it goes on a list of type tested equipment which can be posted on the Commission s web site. An applicant employing the identical type of equipment need not have its equipment and protective devices re-examined.

In New York s case, despite type testing, the proposed standards still require a case-by-case review of the installation for system impact, potentially eliminating many of the benefits of installing type tested equipment. DPCA has argued for presumptive approval of installation of

type-tested equipment, subject to a showing by the interconnecting utility of reasons that the particular installation should not proceed. This would be consistent with established practices for installing conventional, non-inverter-based technologies. Inverter-based testing is already being done around the country, and procedures should be readily available in the near term.

B. What entity(ies) should certify the equipment? Should self-certification by the equipment manufacturers be allowed?

There is general though not universal agreement that certification by competent testing labs and facilities should be allowed, as New York s proposed standards would do. Whatever testing arrangements or facilities are approved under established Commission procedures should be accepted by all participants in the transaction.

V. Information and training to be provided to government agencies

A. What information and training should be provided to fire departments and emergency response personnel?

B. What information and training should be provided to local building officials?

C. What information should be provided to air quality districts?

D. What information should be provided to the CEC under its generator data regulations? (E.g., fuel type, capacity rating, location, etc.)

DPCA supports education and training for government, safety and building officials as appropriate. In most jurisdictions, for example, building codes need to be updated for DER technologies. This is an area yet to be addressed by policymakers. However, lack of attention to local codes could significantly impact the development of DER in the marketplace.

VI. CPUC Rule 21 changes

A. What changes are needed to Rule 21, (e.g., the elimination of qualifying facility (QF) distinctions?). Are complementary changes to other rules required?

DPCA understands that Southern California Edison and other California utilities have or soon will eliminate QF requirements in their Rule 21 standards. At this stage of the proceedings, we express no opinion as to whether complementary changes to other rules will be required. Stand-by charges and other associated tariffs, however, should be fair, nondiscriminatory and priced according to cost.

B. What education and training efforts are required in order to process interconnection applications, should they occur in significant numbers?

To the extent that standardization can be achieved, it promises to minimize the education and training required to process significant numbers of interconnection applications. DPCA favors simplifying standards to the point at which a single technically proficient engineer can determine whether an application meets them. If the volume of applications were to increase suddenly and dramatically, then additional technical resources could be needed.

VII. Advanced communications and metering to facilitate dispatch or scheduling

A. What are the major issues surrounding DG-UDC communications and metering? To what extent can experience with the QF industry provide a useful framework?

The degree and type of communication required is largely a function of the way that a facility is expected to operate. If the unit s output is never greater than the customer s load, then in most cases there would be no more need for special communications than there is when a customer starts up or shuts down its motors or other equipment. In situations where load curtailment or interruptibility is an option, or where other direct dispatch, scheduling or control is required for other reasons, different considerations may be in order. For such cases, it would help to adopt

uniform and consistent communication standards for the same reasons that interconnection standards in general make sense — i.e., accepted standards minimize uncertainty and arbitrariness, enhance predictability, and reduce transactions costs for all parties. Some favor addressing communications issues in the commercial agreements that govern the transaction, while others believe that certainty and predictability benefit from including communication standards within the overall interconnection standard.

B. What protocols are needed to govern the dispatch of DG facilities?

Similarly contrasting views have also been expressed with respect to dispatch protocols. Some argue that they should be included in formal interconnection standards, while others prefer to see them in commercial agreements governing individual situations where the parties have agreed on some form of dispatch arrangement. In those cases, the parties may agree on alternative interconnection designs to support their arrangements. For example, where a utility wants the ability to dispatch a generator to meet system voltage or high load problems, the parties might agree to specify relay settings needed to keep this unit from tripping off when the system needs the generation.

There should also be some differentiation between units that sell energy back to the grid versus those that serve only native load, which will be the case with many DER applications. There are similarities between distributed generation and DSM, which reduces load. Therefore, those units that only provide power to the site should not be burdened with complex dispatch rules.

C. What type of hardware or functional requirements should be required?

The DPCA would support working toward reasonable acceptance of functional or performance-based requirements, rather than prescriptive requirements. We believe that this approach will allow the flexibility to exploit technological advances that are inevitable.

D. Do larger-sized distributed generation facilities need ISO dispatchability?

Some larger DER will need ISO dispatchability, but this issue would be site-specific and at the customer s discretion. From a practical standpoint, the larger the unit, the greater the likelihood of dispatchability.

E. Could ancillary functions be accomplished without utility distribution company dispatch?

DPCA has no comment on this issue at this time.

VIII. Contractual issues surrounding interconnection rules

A. To what extent can interconnection agreements be standardized? In what respects must they be customized?

DPCA believes that a standard agreement for all interconnections within size ranges determined in this proceeding can be developed, provided that purely commercial issues are addressed in separate agreements. Texas and New York have proposed such a standard contract. The technical standards contain most of the terms and conditions, so the standard contract can be limited primarily to covering operations, and can be written in language understandable by most parties sophisticated enough to install their own generation.

B. Are there any liability requirements to be included in the agreements? What is the current situation and what is the insurance industry's position?

Liability and insurance provisions are complex subjects. DPCA is not prepared to address them in detail here, but will simply observe that they should reasonably reflect each party s ability to control the risks assigned to it, and should be as symmetrical as possible. In any case, liability and insurance provisions, if required, should not preclude customers from partaking in the benefits of DER. One example is that of homeowners. Requiring extensive insurance coverage could be a major barrier in the marketplace, particularly if standard coverage for DER is not available from major insurance companies.

C. How can non-discriminatory implementation of the rules be maintained and enforced?

If DER providers must depend on this or any other Commission to enforce interconnection rules, these proceedings will have failed. This is true whether the providers are equipment vendors, project developers, regulated utilities operating outside their service territories, unregulated utility affiliates, or independent energy service companies.

The reality is that small resources simply cannot bear the overhead of administrative or judicial proceedings that often attends large energy projects. The fundamental issue for DER is transaction costs. A 500 MW power project can absorb the costs of protracted administrative proceedings or litigation. A 500 kW project cannot. This means that the smoothest path to implementing sensible interconnection rules is not to rely on enforcement mechanisms, but on the enlightened self-interest of all parties needed to make DER transactions work.

Non-utility providers pursue DER because they foresee genuine opportunities from some combination of locational advantages, increased efficiency and environmental benefits. UDCs can contribute greatly to creating these opportunities — or they can thwart them if their own interests appear to be threatened. Given these realities, DPCA believes that the most important choice facing this Commission and the CPUC is not how best to *enforce* non-discriminatory interconnection rules, but how best to *ensure that all parties have genuine incentives to make these rules work with a minimum of regulatory enforcement*.

IX. Procedural

A. What is the best approach to develop standards in this proceeding?

One approach to developing workable interconnection standards would be to first resolve the larger question of how all stakeholders should capture their fair share of DER benefits if and as they materialize. In this larger effort we would also seek to determine quantitatively the value of

DER and how these benefits can be equitably allocated among the various stakeholders, including the owner, the utility and its customers. Onsite generation should be fully available on both sides of the meter to optimize grid performance.

Certainly, clarifying the role of all stakeholders in a restructured world would provide the parties with incentives to work together to resolve issues. However, that larger question involves important considerations beyond DER that will take time to resolve. These will be the subject of Phase 2 and next year s CPUC Staff study of the UDC s role, which is unlikely to be completed before this Commission proceeds to formulate its interconnection recommendations.

In the meantime, DPCA believes that this proceeding (as well as the CPUC s parallel inquiries) can be expedited and made less contentious by first identifying key principles on which most stakeholders appear to agree, and establishing these as a framework within which to consider specific interconnection issues on which the Commissions seeks guidance. The filings in OIR 98-12-015 suggest that these key principles include at least the following:

- *DER should neither be artificially supported, nor artificially subjected to market barriers;*
- *UDCs should be fairly compensated for distribution services that support DER installations and customers;*
- *Non-UDC DER providers should be fairly compensated for services that provide measurable, verifiable value to the distribution system;*
- *UDCs should be afforded appropriate business incentives to advance cost-effective, environmentally desirable DER;*
- *DER should not result in undue discrimination among customer classes; and*
- *A level playing field should be established for all DER providers.*

If stakeholders can generally agree at the outset on these or similar principles, they can measure specific interconnection and other proposals against the basic principles already agreed to — rather

than against the prospects for tactical advantage in a proceeding whose overall direction remains uncertain.

B. Should working groups be formed? If so, how many and how should the work be divided among several working groups?

Operating within such a framework, DPCA recommends the formation of three small working groups (perhaps on the order of 10 members each). The first group should consist of *technical* experts assembled from utilities, equipment manufacturers and/or vendors, energy service companies, and end-users. This group should convene to develop the structure of a set of interconnection standards. The second group should include representatives of each stakeholder group experienced in creating and or implementing *contractual* arrangements. Its objective should be to develop a basic contractual framework for interconnection, identifying the subjects that need to be included in any agreement, the areas where some consensus exists, and other areas requiring further attention. The third group should also include representatives of all stakeholder groups, and should focus on the *procedural* aspects of interconnection. These might include, for example, the steps that need to occur between application and agreement; their sequence and schedule; the costs associated with each; and methods to fairly allocate costs among the parties.

Each of the three groups should meet regularly, with experienced Commission staff or consultants in a facilitation role, until it develops a basic structure within which further refinements and discussions can proceed. All participants should be prepared to provide the technical expertise to generate constructive dialog between the parties, and unreasonable delay or intransigence by any party should carry a price.

C. How long should it take to develop standards based on the work of other states?

D. Can the schedule for interconnection rules adopted in CPUC R.99-10-025 be satisfied? What process of oversight and facilitation is appropriate to ensure that the schedule is satisfied?

With active Commission involvement and stakeholder cooperation in the process, and building on lessons learned in other states, we think that the process could be completed by June of 2000.

This assumes that all parties are committed to it and understand the importance that California s Commissions place on reducing the per-unit cost of interconnection through standardization. The time required and the ultimate result will be dictated importantly by how the Commission sets up the structure of discussion (see A. above) and articulates its desired objectives.

E. If a working group process cannot provide consensus in the time available, what formal procedures should the Siting Committee employ to provide an opportunity for consideration?

Under the conditions suggested above, we believe that committed working groups can reach consensus on many of the key issues within the time available. On issues as to which good faith consensus is not possible, the Siting Committee can require formal written briefs and/or testimony on opposing viewpoints advanced in the working groups, and can make its final recommendations on those issues based on the persuasiveness of those submittals.

DPCA is grateful for this opportunity to respond to the Commission s questions. We hope these responses assist Commission staff in their important task, and we look forward to participating in the December 6 workshop and subsequent activities.

Respectfully submitted,

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DPCA Members

(as of December 1, 1999)

AlliedSignal Power Systems
Austin Energy
Battelle
Boston Gas Company
California Alliance for Distributed Energy Resources (CADER)
Capstone Turbine Corporation
Caterpillar Inc
CAGT, LLC
Central and SouthWest Services, Inc.
Central Maine Power
Ceramic Fuel Cells Limited
Cleco Corporation
Columbia Energy Group
Consolidated Natural Gas
Distributed Energy Association of Arizona
Distributed Energy, LLC
Distributed Utility Associates
Duke Energy
El Paso Energy
Encorp, Inc.
Enron
Gas Research Institute
GPU International
Harrington Associates Energy Consulting, Inc.,
Illinois Institute of Technology
Industrial Electric Manufacturing (IEM)
International Energy Consultants, Inc.
Interstate Natural Gas Association of America
Keyspan Energy
Kohler Power Systems
National Renewable Energy Laboratory (ex officio member)
NewEnergy Technologies
New Jersey Resources
Nextek
Niagara Mohawk Energy, Inc.
Northern Indiana Public Service Company
Northern Research and Engineering Corporation
Onsite Sycom Energy Corporation
Ontario Power Services Company
Ontario Power Technologies
PECO Energy Ventures
PEPCO
Public Service Electric & Gas Marketing
Resource Dynamics Corporation
Rockwell Automation
Rolls-Royce Allison
Siemens Westinghouse Power Corporation
Solar Turbines, Inc.
Southern California Edison Company
Southern California Gas Company
Southwest Gas
Sustainable Systems Research
Texaco Energy Systems, Inc.
Theroux Environmental Consulting
Total Power, Inc.
Trigen Ewing Power
TU Integrated Solutions
Unicom Energy Services, Inc.
Venable, Baetjer and Howard, LLP
Waukesha Engines
Williams Distributed Power Services, Inc.
Wisconsin Electric Power Company
Wisconsin Gas

ATTACHMENT A